

Freshwater Blues

The scarcity of freshwater fish resources in the eastern Indian state of West Bengal highlights alarming trends in inland capture fisheries

On a rainy day in August, when the availability of fisheries resources is high in the Teesta river here, Bimal Das returned from a four-hour fishing trip with only three kg of fish. While sorting the fish from the ice slabs, a dejected Das contemplated quitting fishing to looking for jobs elsewhere. All across the northern part of the Indian state of West Bengal, fishers like Das are faced with the dire crisis of fish scarcity, pushing them out of inland capture fisheries.

The freshwater aquatic ecosystem of the northern region of the state, once a biodiversity 'hot spot', is now threatened by multiple anthropogenic activities. Such threats not only impact the freshwater biodiversity and fish availability but also livelihood viability of the small-scale fishers. Considering cases from riverine ecosystems in four northern districts of West Bengal, a study tried to understand the ecological, social and political drivers of the vulnerability of small-scale fishers engaged in inland capture fisheries.

West Bengal is called *nodimatrik desh*, meaning the 'land of rivers'. It has a diverse riverine system stretching up to 2,526 km with rivers and canals. The northern part, commonly called 'North Bengal', comprises the districts of Darjeeling, Kalimpong, Jalpaiguri, Alipurduar, Coochbehar, North Dinajpur, South Dinajpur and Malda. These host a diverse freshwater habitats, both rain-fed and snow-fed by the Himalayan rivers. Rivers here include Teesta, Jaldhaka, Atrai, Raidak, Punarbhaba, Tangon and their tributaries. They host a rich faunal diversity, making them ideal for fishing.

Although fishing is not a predominant occupation in North Bengal, a significant population of rural communities belonging to the

backward castes depend on riverine capture fisheries. The fisheries resources in the major rivers have declined significantly, not only from destructive overfishing, but due to external anthropogenic causes. Resource degradation also stems from water control through dams and barrages, abstraction of river water for irrigation, upstream sedimentation due to deforestation, and mineral extraction from river banks, among other factors. These negatively impact the vibrant capture fisheries that provide livelihood and nutritional security to rural communities.

The importance of capture fisheries in alleviating poverty and their contributions to regional nutritional security do not get their due

National policies overlook such negative impacts on capture fisheries because dependence on fishing is seen as a cause of poverty and a barrier to 'development'. The importance of capture fisheries in alleviating poverty and their contributions to regional nutritional security do not get their due. Resource degradation forces fishers to either exit from the sector entirely or shift to fish vending in a highly competitive market of non-native species of fish arriving from other states.

The study analysed such trends from a social-ecological systems approach. It highlighted that such emerging crises are, firstly, located in discursive narratives of river water use; secondly, arise from an inadequacy in governance systems to

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A fisher operating a lift net in the downstream of Teesta river, West Bengal, India. The nature of fishing in the rivers Teesta, Jaldhaka, Atrai, Raidak, Tangon and Punarbhaba is small-scale

manage resources sustainably; and, thirdly, occur due to a lack of political will to support small-scale fishing communities to sustain their livelihood and integrate them in governance processes to manage and protect water bodies.

level gradually recedes after the month of November, especially in downstream areas; in some cases the rivers dry up completely until the monsoon rains. In upstream areas, the rivers retain water through the year.

Fishers in the upstream areas usually set sail on boats where water currents are stronger. They are usually gill-netters. In some cases, they cast their nets from the river bank as well. In the downstream areas of the rivers, where the waters are shallow and currents weaker, fishers cannot use boats. Here fishers mainly use cast nets, stake nets, lift nets and scoop nets, built for manual operation without being attached to the craft. Such gears are stationed on specific fishing grounds and are not mobile in nature.

The catch per unit effort (CPUE) in riverine capture fisheries in North Bengal is extremely low. The average CPUE in upstream areas is five kg per day, whereas in downstream areas it drops to three kg per day. Fishers say the CPUE is gradually diminishing over

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Features of small-scale fishing

The nature of fishing in the rivers Teesta, Jaldhaka, Atrai, Raidak, Tangon and Punarbhaba is small-scale. The fishers operate on handmade non-motorized craft and use passive gear to catch fish. Its norms and knowledge have been passed down through generations. The type of boat is determined by water availability in the rivers. The water

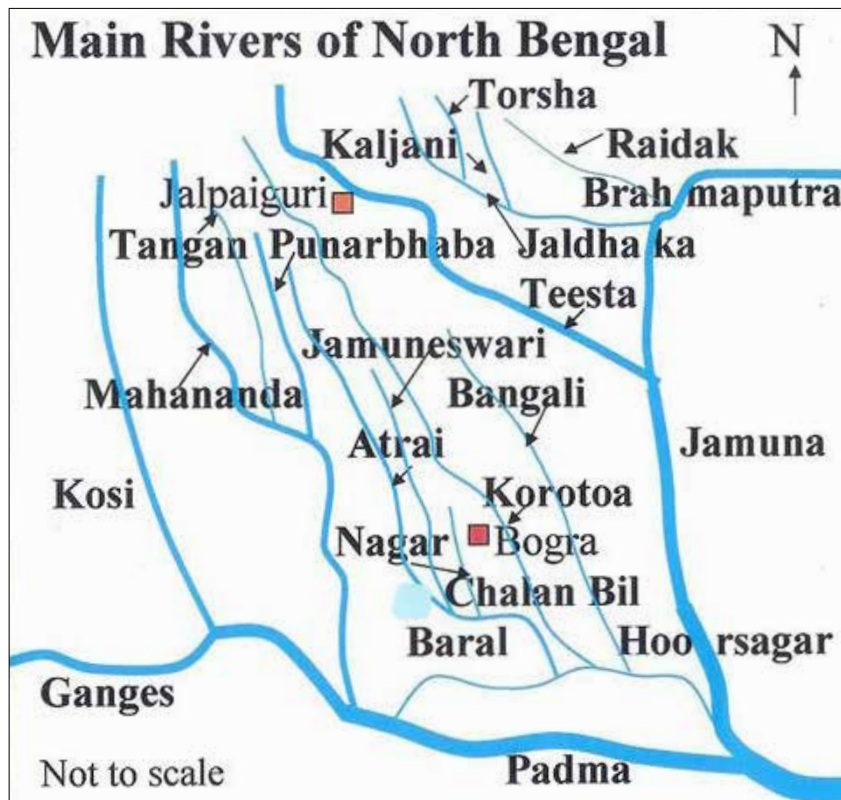
the years. They take the catch to the wholesale auction market to sell. The decreasing CPUE compels them to sell their catch themselves by the road near the markets at prices much lower than prevailing market rates. Lacking cold storage boxes to preserve their catch, the fishers have no option but to distress sell on the same day.

The fishing communities can no longer rely on capture fisheries for livelihood. Diversification into work as agricultural labourers or wage labourers and, in many cases, out-migration to other states for manual wage labour has become common.

The fishers in North Bengal belong to socially backward castes and are mostly migrants from Bangladesh. Due to their poor social status, their political representation in the local, state and national-level decision-making in the governance of water bodies is extremely marginalized. Further, in the absence of a legal or political identity as a fish worker, their work remains largely 'informal'. Their contribution to inland fish production goes unrecognized. According to the International Classification of Status in Employment (ICSE), determined by the International Labour Organization (ILO), such small-scale fishers engaged in inland fisheries can be classified as 'own account workers'. They fall under the broader category of 'self-employed' because they deploy their own labour and capital to catch fish and are not employed by anyone else.

Despite attempts of the state government to recognize fisherfolk by issuing identity documents called 'Matsyajibi Card', many fisherfolk remain outside the purview of the programme. As a result, they are deprived of the necessary social protection in the form of social insurance and assistance; they end up excluded from the safety net during the lean season when fishing is not possible, especially in the downstream areas. They are not allowed to exercise their customary rights to access and manage the water bodies.

In the absence of customary rights, the fishers have to engage in multiple political struggles to access the fishing grounds. Property relations in the



Source: https://en.wikipedia.org/wiki/List_of_rivers_of_West_Bengal

river stretches are not formally coded, leaving capture fisheries to open access. Consequently, powerful groups with the backing of local political elites from the ruling party often privatize river stretches informally, looting the fish resources by staking large mosquito nets across the rivers. Such cases have been reported by the traditional fishers of the rivers Tangon and Punarbhaba in the South Dinajpur district.

In this district, fishers operating near the India-Bangladesh border are often subjected to harassment by the Border Security Force (BSF). The soldiers frequently mistake the fishers as intruders or smugglers from the neighbouring Bangladeshi villages, confiscating their gear and catch, aggravating the already marginalized. The desperate fishers' ability to organize themselves becomes even more difficult when they are faced with challenges of daily survival, spending long hours in fishing or other wage labour work. In the absence of rights and entitlements to protect and manage the water bodies, fishing communities cannot mobilize themselves to overcome the

causes for depleting fisheries and the deteriorating health of the riverine ecosystem.

The decrease in fish stocks results from the negative impacts of anthropogenic activities on freshwater biodiversity. It is a misnomer to label

Without customary rights over the water bodies, disempowered fishers have no way to prevent unsustainable and damaging practices

them 'natural'. Based on fishers' responses, the causes and effects of the severe threat to the freshwater biodiversity is summarized in Table 1.

Apart from the weather variability from climate change, all the listed causes are directly related to human interventions—in the larger frame, climate change is anthropogenic, too. Dams and barrages on rivers to regulate

water flow dominates the development discourse. Benefits derived from them include production of 'green' hydroelectricity; irrigation; industrial and domestic use of water. Such development discourses do not account for the health of the aquatic ecosystem or the livelihood of those who depends directly on it. Dams seriously affect the movement of fish and spawning areas, thereby affecting fishers. Infrastructure on riverbanks disturbs spawning areas, resulting in migration of fish species.

From pollution to destructive fishing using poison and electricity, from the growth of hyacinths on channel inlets to sedimentation and mineral extraction, all the threats can be attributed to a lack of governance and protection of water bodies. Without customary rights over the water bodies, disempowered fishers have no way to prevent unsustainable and damaging practices. Everything speaks to inadequate governance mechanisms.

The cumulative impacts of social, political and ecological factors are

Table 1: The causes, the severity of each threat and its impacts on freshwater biodiversity and fish resources

Dams, barrages and barriers	High	Prevents movements of fish schools, isolates populations
Unpredictability of weather and variability due to climate change	High	Increasing water temperature breaches the thermal maximum of fish species, forcing them to migrate
Infrastructure development along riverbanks like roads, embankments, houses, bridges	High	Change in spawning areas
Destructive fishing with poison, electric shock, explosives	High	Depletes fish stock. Use of poison and electric shocks is a serious threat in the rivers of Alipurduar district like Raidak 1, Dhaula, Dharsi and Turturi
Water flow regulation by opening and closing of dam floodgates	Medium	Changes water level, disrupting spawning
Pollution, toxic waste from farmlands	High	Pollutes water bodies, depletes fish stock, depletes spawning grounds
Growth of invasive species like water hyacinth	High	Changes nutrient levels in water, hits food webs, destroys bottom habitats
Sedimentation	Medium	Disrupts the flow of river water and movement of fish
Mineral extraction, sand mining	High	Erosion of the river bank and bed, affecting the river's course and flow

forcing small-scale fishers to exit from inland capture fisheries, either fully or partially. The study found many fishers entering the fish vending business, buying non-local fish from auction centres to sell in the market. Which brings them in direct competition with existing vendors operating with a larger capital base. Such trends question the basis of nutritional security from the declining local catch. The fishers who have completely exited the sector lack adequate adaptive capacities to cope with the resultant vulnerability.

Policy: a wrong direction

The recent West Bengal Inland Fisheries Policy 2023 aims to conserve aquatic resources and enhance fish production. Yet fishworkers' bodies in the state are concerned; they say the policy lacks a well-defined framework of fishers' rights and roles. The organizations include the Dakshinbanga Matsyajibi Forum (DMF) and the Uttarbanga Matsyajibi Forum (UMF). It contains little to no mention of the current state of affairs of not only riverine capture fisheries but also reservoir fisheries. Nor to the large number of smaller tank and pond fisheries that have high contributions to fish production in the inland fisheries of the state, providing livelihood to many.

The policy prescriptions allow leasing out of water commons to private entrepreneurs through auctioning. This will alienate the small-scale fish workers from exercising their rights to access, protect and manage the water bodies. Enabling privatization of the water commons through a leasing system alienates the customary rights of small-scale fisheries; it is also antithetical to the cause of sustainability. It disrupts ecological health by introducing non-native species and encouraging the pursuit of intensive aquaculture and cage culture.

How can this be addressed? For one, the participation of the traditional fishing communities in co-management efforts, along with responsible state departments and research institutes in conservation and rejuvenation of fish resources in the rivers. The state's inland fisheries policy must prescribe measures to protect the rights of small-

Table 2: River-based distribution of fish species has become scarce in the past decade, according to a survey among traditional fishers

Rivers	Local Name	Scientific name
Atrai	Bacha	Eutropiichthys vacha
	Chela	Chela cachius
	Dari	Schistura scaturigina
	Chnada	Pseudambassis baculis
Tangon	Boal	Wallago attu
	Tengra	Mystus vittatus
	Ar	Sperata aor
	Boal	Wallago attu
	Bacha	Eutropiichthys vacha
	Tengra	Mystus vittatus
	Gagor	Hemibagrus menoda
	Ghaira	Clupisoma garua
	Kajoli	Ailia punctata
Punarbhaba	Bacha	Eutropiichthys vacha
	Ar	Sperata aor
	Tengra	Mystus vittatus
	Kajoli	Ailia punctata
	Chela	Chela cachius
	Bou	Botia dario
	Tinkata	Pseudolaguvia shawi
Teesta	Chitol	Chitala chitala
	Boal	Wallago attu
	Ar	Sperata aor
	Baghair	Bagarius bagarius
	Sillong	Silonia silondia
	Shorputi	Puntius sarana
	Shol	Channa Striata
	Puia	Acanthocobitis botia
	Bacha	Eutropiichthys vacha
	Kajoli	Ailia punctata
	Chapla	Gonialosa
	Pangash	Pangasius pangasius
	Ritha	Rita rita
Jaldhaka	Bata	Labeo bata
	Khoksa	Barilius vagra
	Kajoli	Ailia punctata
	Boirali	Barilius barila
Raidak	Ar	Sperata aor
	Boal	Wallago attu
	Ritha	Rita rita
	Kalbaush	Labeo calbasu

scale fisheries over water bodies. Small-scale traditional fishworkers are by far the largest non-consumptive primary stakeholders and natural custodians of

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Fishers preparing to cast their net from the riverbanks of Teesta river near the Teesta barrage, West Bengal, India. Enabling privatization of the water commons through a leasing system alienates the customary rights of small-scale fisheries

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For more

NPSSF website

<https://smallscalefishworkers.org/small-scale-fish-worker-organisations/national-platform-for-small-scale-fish-workers-inland/>

Poverty in small-scale fisheries: old issue, new analysis

<https://journals.sagepub.com/doi/10.1177/146499341001100203>

Profits and Perils of Farming Fish

<https://www.icsf.net/resources/profits-and-perils-of-farming-fish-case-studies-of-shrimp-and-carp-aquaculture-in-west-bengal-santanu-chacraverti-2022/>

SIFFS Workshop Report, 23-25 February 2010

<https://www.icsf.net/resources/workshop-on-small-indigenous-freshwater-fish-species-their-role-in-poverty-alleviation-food-security-and-conservation-of-biodiversity-siffs-workshop-report-23-25-february-2010-c-2/>

water bodies. Their inalienable rights to access and manage water bodies can ensure sustainable management of fish resources wherein stock replenishment is naturally facilitated alongside traditional fishing.

At every step of the governance of the inland fisheries, small-scale fishers and fish farmers must be consulted since their engagement in inland fisheries is directly linked to the health of the freshwater biodiversity. Extension of rights to water bodies and inclusion of unions and organizations of small-scale fishers in planning and management of fisheries resources can be a step forward. It will help build up the adaptive capacities of small-scale fishers, also facilitating conservation and rejuvenation of aquatic and fish resources in freshwater ecosystems. Further, the relevant state departments and governing bodies must monitor that all small-scale fishers engaged in inland fisheries are identified and registered in the national statistics. That will pave the way to cover them under a comprehensive social security framework, ensuring the delivery to fishers of the benefits accruing from

state and central fisheries policies and schemes.

Such an integrated ecosystem approach to inland fisheries, based on human rights, can have longstanding positive results to maintain the health of the freshwater ecosystem. It can protect small-scale fishers, while enhancing the production of native fish resources that have the potential to secure the nutritional needs of the community at large. 